Initial Draft Information Technology Roadmap

Components of the Enterprise Architecture

Updated October 30, 2009

March 28, 2008

Section #1
Introduction

Strategic Plan Goal #?

Translate service requirements into a technology roadmap that will lead to improved IT service.

A fully-functional, successful state IT delivery model will include Service Level Agreements (SLAs), a governance model, portfolio reviews, a disaster recovery plan and service-oriented architecture.

An efficient service delivery model will allow the state to introduce new technologies quicker and more efficiently to state agencies.

In addition, the model will hold state IT staff accountable to SLAs, thereby increasing IT service excellence throughout the state.

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Objective 1 – Create the Technology Roadmap

A team will be established to develop a robust technology services delivery roadmap that will meet the varied needs of state agencies as well as enhance the service they provide to Indiana citizens and businesses.

Milestones: Initial Roadmap for Goal #___ Committee review

Create initial roadmap for IT Directors review

Objective 2 – Create the Technology Review Process (Governance)

Maintaining the technology roadmap is as important as initially creating it. The ongoing oversight and process of keeping the technology roadmap up to date will ensure it's efficiencies and other benefits are ongoing.

Milestones: Initial Process for Goal #___ Committee review

Create initial Process for IT Directors review

Our Vision

Technologies will deliver to the citizens of Indiana and its government workforce accurate, timely, effective and secure information to service their needs. Citizens will be serviced with a single view via linked information from all State agencies. All State systems will be implemented to function in a unified manner, providing flexibility to avoid impacting operations and service delivery.

Our Team

Gerry Weaver	Sponsor / IOT CIO
Brian Arrowood	Chairman / IOT
Tony Bender	DCS
Anne Brinson	IOT
Roy Gabriel	Revenue
Robert Hughes	FSSA
Jay Lytle	INDOT
Chris Mickens	Health
Tim Ping	DNR
Bill Pierce	IOT

-Data Management

-ESB

-Business Intelligence – BI

-Enterprise Content Management – ECM

-Leveraging Peoplesoft

Section #2
Technology Review Process (Governance)

Governance

Manage Roadmap Tasks

Adherence Tasks

Communication Tasks

Governance - Manage

1. Committee Membership – Initial membership appointed by CIO

   Permanent
   - 1 for IOT - Chair
   - 5 for > 1,000 User Agency
   - 3 for <1,000 User Agency
   - 3-4 for optional seats from non-exec branch @ committee recommendation/CIO approval

   Rotation Officially established July 1, 2008
   - 2 year term except for initial committee
   - 1 year term for 50% of initial committee for coherence

2. Assessment Tasks

Category Sponsor/Product Manager

Direction, Business Needs

Agency

Statewide

Federal

Technologies

3. Manage Changes

    Update the Roadmap documents

    Keep Technology Current (Evolution)

      Do new technologies go in?

      Do existing technologies go out?

      Do technologies change within the Roadmap?

4. Meeting Occurrence

    Monthly

    2 Hrs in Length

    First 30 minutes for presentations by

    Category Sponsor/Product Manager

Governance - Adherence

1. Compliance Survey

>> Annual Survey to all Agencies

>> Corrective plans required for all non-compliant areas

>> Consider/document Federal mandates

>> 1st survey due out in June to allow prep time for budgeting issues

>> Publish a Non-Compliant List

2. Manage Exceptions

Written justification for waivers

Weaver – Establish Rules w/IT Directors

Possible Governor Approval/Mandate

Budget Impact

Escalation process

3. Reward/Positive Impact

Convince Upper Mgmt of the importance of the Road Map and the drawbacks of being non-compliant.

Must have mgmt buy-in and support.

4. OMB Involvement

Something similar to desktop consolidation.

No Cabinet Discussions!

Governance - Communications

1. Non-IT Environment Communications

    Facilitated by IOT Communications

    Publish the IT Roadmap

2. The Gov Update process

    Updates to the Roadmap

    Updates to the Governance Process

    Past Meeting Notes

    Future Agenda

    Schedule

3. Linking to the Overall Strategic Plan

Section #3
The Technology Roadmap

Our Focus Areas

- Customer Service

- Networks – Wireless

- Network – Wired

- Telecommunications

- Servers & Mainframes

- Database

- Data Management

- Workstations

- Peripherals

- Applications

Definitions

- **Legacy**: identify existing, in-use technology that we want to stop using and replace ASAP.

- **Current**: existing standards.

- **Future**: recommendations/expectations out 5 years.

Customer Service

Legacy:

Existing automatic call distribution system has technical limitations that do not support our future direction

Current:

Perimeter Technology VU-ACD/100 Version 3.0 Standard Edition Software

Future:

Establish a single call center (with single 800 number) with routing to appropriate agency/division/department.

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Legacy:

• Non-IOT Sponsored connectivity solutions such as retail based wireless devices or those devices not designed and deployed by IOT staff that do not support minimum security standards such as AES encryption or RADIUS Authentication.

Current:

Mix of Non-Supported (Retail Based) wireless and Supported (IOT Service Offering).

The IOT local wireless service offering affords users wireless access on IGC campus and remote sites via a centrally-managed and secure wireless solution. Customers using a PC with specific wireless and security capabilities can take advantage of this Active Directory integrated secure wireless solution. The costs of the indoor access point, wireless controller, its management console, redundant authentication servers, support and maintenance of the centrally-located and managed equipment are included in the per access point, monthly subscription fee. The service does not include outdoor wireless solutions, site survey's or solution specific hardware. Contractor and guest access can also be provided securely via each access point.

Future:

• Support for Voice, Video and Data over the same infrastructure

• Location services for asset tracking

• Remove all non-IOT solution based wireless

• Expansion to State of Indiana connected sites as required for Inter-Agency Sharing

Legacy:

• Non-IOT Sponsored connectivity solutions such as….. (none at this time)

Current:

• IOT supports 1800 Blackberry devices and 8270 Cellular phones and aircards. Users connect thru 2 enterprise Blackberry Servers and utilize VPN to connect with aircards.

Future:

• Researching and considering Windows Mobile based devices at this time. WiMAX evolution and new higher speed next gen cellular based data networks.

Networks - Wired

Legacy:
- Non-IP based LAN Protocols – IPX, SNA, DLSW.
- Non-IP based Routing Protocols – IPX-EIGRP, IPX-NLSP, RIP.
- Non-Ethernet based transport for LAN traffic – No Token Ring or Coaxial for Mainframe LUs in the user community.
- Non-IOT Sponsored connectivity solutions; hubs or retail based wireless, routing or switching devices
- Non-Manageable switching devices with new manageable devices that meet IOT minimum specifications.
- Internet Service Provider Dialup solutions

Current:

A single vendor standard is hereby established for data network hardware, including switches, routers, wireless access points and firewalls. The vendor selected is Cisco Systems, Inc. Standard hardware configuration designs will be utilized to minimize deployment times and provide high performance, scalable, secure networking solutions.

Future:
- Migrate from Serial to Ethernet based connectivity/services when/where available at State-based agency/county offices for increased speed for the next phase of Voice/Video/Data on the LAN.
- Implement a shared network connection where multiple State Agencies reside at the same location
- Add DWDM ring downtown to add redundancy to campus sites and MAN connected sites in the metro Indy area.
- Port based access restrictions on wired infrastructure to match wireless environment.
- IP only based Communications - Voice, Video and Data on the same cable plant and network infrastructure.
- Redundant Internet Service Provider connectivity.
- VPN over Wireless, xDSL, or cable as the backup for the primary WAN/Remote office link.
- Included Power over Ethernet to provide electrical needs for IP based Phones, Wireless Access Points, Video Cameras and other capable devices.
- IOT is "The" Service Provider for all connectivity and communications infrastructure needs for State Agencies.
- Energy Management to improve Green practices across the entire Corporate Infrastructure

Legacy:

Centrex Systems:

    2 Nortel DMS100, 43 Miscellaneous CO's

PBX Systems:

    Nortel Meridian/1000M, Tadiran Coral III, ROLM 9751, Mitel SX-200.

KTS Systems:

    Nortel Norstar/BCM, Toshiba DK, NEC/TIE/Nitsuko, Comdial, Avaya,
    Inter-Tel, Macro-Tel, Tadiran, Atlas, Panasonic and Vodavi.

Cable Structure:

    Category 3 1 pair for Phone
    Category 3/5 Data

Current:

PBXs

    49 Nortel (1000M, 1000M-SG), 5 Tatiran, 2 Siemens /ROLF, 3 Mitel, 1 Comdial

Key Telephone Systems

    150 Nortel BCMs, 354 Nortel Northstar, 21 Toshiba, 10 Cisco, 10 NEC/Tie/Nitsuku, 6 AT&T, 1 Comdial, 1 Tatiran, 1 Atlas, 1 Panasonic, 1 Vodavi

PSTN Services

    Gigaman, PRI, Centrex, T-1, DS3, Ground Start Trunks, Loop Start Lines, POTs

      50,575 known Lines

Wiring Plant

    Category 6 standard for new Phone and Data installs

    50 Micron Standard for new fiber installs

Telecommunications

Future:

PBX/KTS Systems
When replacing obsolete systems evaluate the viability of an IP based solution

Wiring Plant
Replace DID/DOD Trunks with PRIs for PBX Systems
Replace sites with >7 POTS Lines with PRI
Standardize Remote Office wiring
    Dual cat 6 drops (minimum)
    Standard secured communications infrastructure cabinet
    Environmental monitoring and UPS

Service
Implement standard pricing model for all IP-Based voice/video services
Develop Standardization/consolidation strategies for:
    Contact Center
    Unified Messaging
    Call Accounting and Call Recording
    IVR/ACD systems
    Video Conferencing

Legacy:

Current:

The State of Indiana has selected Dell Computer Corporation as the standard for Intel processor-based server hardware.

The current support standard configurations are:
    Small workloads   – Dell PowerEdge R610
    Medium workloads   – Dell PowerEdge R710
    Large workloads   – Dell PowerEdge R900

At this time, the State of Indiana does not authorize the use of AMD processors in server platforms.

Future:

Dell will be continually revamping its server lineup throughout 2008 and IOT will update the standard server configurations accordingly.

Mainframes

Legacy:

• VTAM subarea technology utilizing NCP - We are no longer using subarea connections, just APPN connections (current technology)

• 3745 and 3174 SNA hardware technology - All of this hardware has been inactivated and is no longer in use

• IBM AnyNet technology to provide connections from mainframe CICS and DB2 subsystems to remote AS/400 systems - AnyNet has been removed from the system. The AS/400s are now using APPN Enterprise Extender connections. (current technology)

• Mainframe disaster recovery procedures have in the past consisted of restoration of software and applications to a DR vendor such as SunGuard – We are now providing for Disaster Recovery with a dedicated z9 mainframe at the DR site at IU Bloomington

• TN3270 access provided by agency selected emulation software from various vendors and offering varying degrees of support – This is still a valid statement

Current:

•   All communications to and from the mainframe will use the TCP/IP protocol if at all possible, unless some restriction forces the use of pure SNA. The use of older SNA protocols and hardware will be strongly discouraged – most of the older SNA protocols are no longer possible, as we do not have the hardware any longer

•   VTAM APPN technology utilizing Enterprise Extender

•   All 3174 network hardware has been removed, and mainframe consoles now use TCP/IP based Integrated Console Controller connections

•   A new z/VM environment, which currently serves up several virtual z/Linux servers

•   New high speed HiperSocket connections have been established between the production LPAR, test LPARs, and the z/MV and z/Linux LPARs. This will aid in agencies wishing to preserve their backend data, while exploring new ways to present the data to their users (web front end on Linux)

Mainframes

Future:

• Migrate to VTAM APPN technology to provide communications with government agencies and vendors outside of the State's SNA network - This has been completed

• Identify SNA traffic utilizing the 3745 and 3174 hardware and migrate this traffic to TCP/IP – This has been completed

• Migrate to IBM VTAM Enterprise Extender as a supported replacement for applications currently using the IBM AnyNet product – This has been completed

• Implement new disaster recovery procedures with data replication to the DR mainframe located at Indiana University – This has been completed

• Implement an enterprise wide method of providing fully supported TN3270 emulation software to all State agencies – No significant progress has been made with this task, and it is still probably considered a desirable goal. In preparation to move our Bluezone software to the z/Linux environment

• Migrate the DB2Connect environment completely to the z/Linux environment

• Complete migration of the majority of file transfers to the Federal Government to the new CyberFusion product, instead of ConnectDirect.

• Additional applications for the z/VM and z/Linux environment

• Continue to find and consolidate or eliminate redundant software on the mainframe for cost savings

Database

Legacy:

SQL 7.0, SQL 2000, IDMS, IMS, Oracle 8/9

Current: *(usually 1 release/update behind)*

Operating System	DBMS Choices
z/OS	DB/2
UNIX	Oracle or DB/2
Windows NT	SQL Server or Oracle
Windows "x"	MS/Access

Future:

•Stay current with database software releases. Apply and test service packs and security patches to meet state security guidelines.

•Promote data encryption and other security measures for at-risk data using new database technology.

•Build high-availability, shared database environments to allow flexibility, scalability and cost reduction.

•Continue to automate and grow backup environments to meet onsite recoverability and offsite DR needs.

Data Management

Legacy:

Current:

The Indiana Office of Technology hereby establishes EMC hardware as the sole standard for storage systems. IOT is charged with managing and maintaining a centralized storage infrastructure

Future:

The storage of State of Indiana owed data and information will be managed utilizing technology with built-in growth capabilities. Server and storage farms will be provided for agencies to acquire growth as business needs dictate.

Workstations

General:

Acquisition Protocols (who to call, what forms to fill out, use of Peoplesoft?, etc). Web-based request system is coming!

Legacy:

Current:

Dell is the standard vendor. IOT purchases and supports the desktop environment on a 4 year scheduled refresh.

Admin Rights only authorized by Security Coordinators (and limited).

Software distribution is automated and packaged with hardware refresh.

Users store data on the local desktop, currently being migrated to network with hardware refresh.

Future:

Remote Hardware KVM capabilities to increase support response time on all desktops and laptops.

Admin rights are no longer authorized outside of IOT technicians and limited for them.

Baseline security model on all desktops with rollout of Windows 7.

USB use controlled and limited to authorized encrypted devices.

General:

1. Acquisition Protocols (who to call, what forms to fill out, use of Peoplesoft?, etc)

2. Use of State Rental Agreements (instead of agency/department rental agreements)

Legacy:

Current:

Agencies purchase peripherals outside of printers without approval process.

Future:

Managed print services will be implemented. Print assets will be owned and managed by provider and scaled to maximize cost effectiveness per page based on business needs. Print redirection will be automated and logs will be produced for review as necessary.

Will be standardized for major devices.

Web-base approval and acquisition.

Applications (general)

General:

1. Software Acquisitions
    - a. Protocols (who to call, what forms to fill out, use of Peoplesoft?, etc)
    - b. license inventory

2. Software Development Tools
    - a. Standards (i.e. .Net, Erwin Data Modeling, approved 3rd party controls, etc.)

3. Enterprise support agreements with vendors (i.e. Microsoft, Oracle, Seagate, etc)

4. Deployment considerations (i.e. Agency had custom application developed, but it required .Net 2.0 Framework installed...who should install the framework?)

Applications

Legacy:

Applications generally are agency specific. Consideration has been provided for applications that necessary for state-wide management of key functions common across agencies.

Current:

The Indiana Office of Technology hereby establishes Environmental Systems Research Institute, Inc. (ESRI) software as the sole standard for all Geographic Information Systems. State agencies developing new or significantly enhanced GIS applications will use ESRI software.

The Indiana Office of Technology hereby establishes PeopleSoft as the sole standard for all Human Resources and Financial Management systems and shall refer to all such implementations as "Government Management Information Systems (GMIS)". State agencies developing new or significantly enhanced applications to address these functional areas will use GMIS. The PeopleSoft Human Resources modules include the Time and Labor module, this will be the standard for electronic time reporting. The Indiana Office of Technology must approve any deviations from this policy.

Future:

Enterprise-wide applications will be addressed through the governance component of the technology plan and roadmap.

Applications

Legacy:

Current:

All state applications will be packaged and automated for deployment and configuration. All agencies will use the same images as new technology (Softricity/Microsoft App-V) will virtualize applications allowing them to run without affecting other applications or the base image. This has been implemented with the refresh schedule and is estimated completion by 2012.

Future:

Applications will be reviewed and updates packaged on a regular schedule with IOT/agency cooperation.

Applications

Legacy:

Web-based and Internet applications are utilize multiple platforms and tools to develop, test, maintain and deploy. Technical resources are not available to keep pace with application demands.

Current:

Internal and external development processes are being utilized by agencies. A statewide initiative to redesign all state agency sites and implement the web content management solution (CMS) is in progress.

Future:

Processes and resources will be identified to assist agencies with web application development and production client/citizen electronic service centers.

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Legacy:

Data & information sharing among agencies is depended on file transfers (cd, dvd, diskettes, external storage devices), data base interface tables, ftp mechanisms, etc.

Current:
The development of shared connectivity via enterprise service bus (ESB) technology is being attempted by a few agencies. For example, the 'death notification' service provides a mechanism to alert Family and Social Services Administration (FSSA) when a citizen has been recorded as deceased by the Indiana State Department of Health (ISDH). This information should be made available to multiple agencies. The Department of Workforce Development (DWD) and Department of Revenue (DOR) are moving forward with plans to receive the same type of information by the end of 2007 and more are on the way. In addition, approximately 35 other uses have been defined for the ESB, covering multiple agencies.

Future:
Connectivity to data base information across agency boundaries will be ready available utilizing technologies like ESB.

Applications

Legacy:

Information and data storage is largely transaction based, allowing limited manipulation and analysis without specialized queries and program development.

Current:

Access and management of data & information within and across agencies is partially implemented within a few agencies via data warehouses.

Future:

Data warehouse technology will create information management tools for agencies to manage daily service deliver operations, while provide access to data banks and data bases for analysis, forecasting, research and other uses of information maintain on an internal and external basis.

Applications

Legacy:

Over a hundred different web designs with very little consistency. Multiple methods of website development and processes used to publish web content.

Current:

The majority of Executive Branch offices and some separately elected officials have been integrated into an enterprise content management system with a single state look and feel.

Future:

Processes and resources will be identified to assist agencies with web application development and production client/citizen electronic service centers.

Applications

Legacy:

• Mobile devices are unable to render complex web content

Current:

• All executive branch agencies and a few separately elected officials have a mobile website available. Initial applications were developed as a prototype.

Future:

• Processes and resources will be identified to assist agencies with additional mobile applications that will provide online services pertinent to a citizens mobile needs.